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Opponent report on the dissertation thesis

Author: CLAUDIA SORTINO

Title: THE ROLE OF EMOTIONS AS TRANSMITTED BY THE USE OF
CARTOONS AND GAMES IN CONSTRUCTING MILIEU IN NEGOTIATING
MATHEMATICAL KNOWLEDGE IN PRIMARY AND LOWER SECONDARY
SCHOOLS.

Advisor: Prof. Filippo Spagnolo

Size: 206 pages.

The thesis of Claudia Sortino introduces research in which she has studied the teaching/learning processes in primary and lower secondary schools. The aim of this research was to construct particular teaching milieu and to refine “tools or attitudes” which the teacher can use in order to improve the understanding of mathematical topics.

Author proposed the emotions as an important factor for changes in the learning and she tried to use emotions not by “imposing” knowledge but by encouraging learning.

Mrs. Sortino’s thesis contains introduction, six chapters, appendices and bibliography.

We can identify two content frames in the thesis. Theoretical part (chapter 1 and 2) includes psycho-physiological fundamentals of emotions, elements of the Theory of Embodiment, elements of the Theory of Didactical Situations and history.

The chapter 1 is especially devoted to the relationship between the emotional state and the sensorial experience in situation of some context. The methodology, which the author used, was derived mainly from the Theory of Didactical situations. Theoretical part has very good quality. Author had studied a lot of actual bibliography and applied it in proper way.

The experimental part (chapters 3, 4, 5, 6) is structured into two main areas by used instruments: cartoons and games. Author created cartoons and the “Guess the Number” game and describes her experiences with implementation of cartoons and games in classrooms.

In the second experiment “Guess the number” the activity of researcher – teacher was organized in the following way (p.118):

- a) **initial aim:** to solve the problem;
- b) **condition which justifies modeling:** not knowing how to solve the problem;
- c) **discursive phase:** the teacher listens to individual learners comments and ideas;
- d) **translation phase:** the teacher translates the problem described in natural language into mathematical symbols and then begins to reread it and reflect on the above;
- e) **a mathematical model is created and the problem of this model is reread:** in this way the use of mathematical tools for solving the problem is highlighted;
- f) **the mathematical problem in the model is solved;**
- g) **go back to comment on the solution of the real problem:** the relationship between the model and reality can be exploited in interpreting mathematically – obtained results.

Author described for both experiments the group of the learners, methodology of introduction to the activities, analysis a priori and conclusions. She verified research hypotheses H1 - H4 (p.13) and stated results of experiments.

We can say that the aim of dissertation thesis was completed. Given work contains actual knowledge mainly in theoretical part of work.

However, formulation of hypothesis on the page 13 is arguable and is not totally clear what the author verified. It would be good for example in hypothesis H1 (H1: constructing teaching situations, involving a conscious use of cartoons to facilitate devolution) more clarify meaning of the word “devolution”.

The author in her research applied Theory of Didactical situations, what is also contribution for Didactics of Mathematics.

The results of research could be recognized as original ones. Although, it is difficult to rate validity of author's conclusions from some formulation e.g. p. 111₆: *learners seemed to understand...* p. 130₈: *it can be inferred from the results of my experimentation* (it is not clear how) etc.

The work is written comprehensible, only pictures on some pages and written answer of pupils are little illegible.

The author showed her ability to conduct research in the area of Theory of Mathematical Education. Therefore I recommend accepting the thesis and after its successful defence to grant the applicant Claudii Sortino the academic title **philosophiae doctor** in the specialization 11-17-9 Theory of Teaching Mathematics.

Bratislava, December 10th 2005

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